Alex Steele

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Education

University of British Columbia **September 2019 – April 2024**

B.Sc. Combined Honours Computer Science and Physics, CS Average: 96.7%

Relevant Coursework:

- Computation, Programs, and Programming
- Software Construction
- Computer Systems
- Data Structures and Algorithms
- Relativity and Quanta
- Electricity and Magnetism
- Quantum Mechanics
- Intermediate Experimental Physics

Work Experience

University of British Columbia **January 2020 – Present**

Undergraduate Teaching Assistant

- TA for CPSC 110: Computation, Programs, and Programming, UBC's major-stream introductory computer science course, for seven academic terms.
- Lead TA for internal systems, including the autograder and handin server, since September 2020.
- Summer Course Development Assistant in 2020 and 2021.
- Coordinates with the professors, course coordinators, and other TAs to ensure that students comprehend course concepts.
- Supervises multiple weekly laboratory sections of about 30 students each, in which hands-on learning of the course content is facilitated.
- Develops graders, server scripts, and other tools in **Racket**, **Python**, and **Bash** to streamline instructors' workflows and improve students' engagement with the course.
- Aided in planning how the course would be taught online during the COVID-19 pandemic.

Kepler Communications **January 2021 – August 2021**

Software Engineer Intern

- Created drivers for the LCD and keypad on Kepler's next-generation modems using **Python**.
- Architected and developed a modular user configuration menu for the modems using my driver.
- Designed, implemented, and tested multithreaded systems connecting the next-generation modems' configuration interfaces to Kepler's Global Data Service in **Python** and **Bash**.
- Wrote suites of unit and integration tests using **PyTest** with full coverage for all new features.
- Refactored and expanded Kepler's **SQL**-based remote deployment system by generalizing software image database to support multiple satellite models with different compatibilities.

Skills

Programming Languages: Python, Java, C++, MATLAB, C, Racket

Technologies: Git, SQL, PyTest, Django, Flask, Scientific Python, LaTeX, Bash, Linux

Technical: Data Analysis, Object-Oriented Design, Agile Development

Other: Communication, Organization, Teamwork, Teaching, Time Management, Problem Solving

Extracurricular Activities

UBC Rocket **January 2020 – Present**

Avionics Team Member

- Develops software in **Python** with a team of other programmers to control the functioning of flight-critical and data collection electronics for UBC Rocket's various projects.
- Optimized rocket mapping software to allow for it to update in real-time by implementing **multithreading**.
- Implemented automated integration testing framework using **PyTest** to ensure that signals to arm the rocket would be properly sent and confirmed.
- Designed and implemented an modular profile system to allow the ground station to operate multiple types of rockets.

Projects

MSP430-Based Quadcopter **February 2022 – Present**

PHYS 319 (Electronics Laboratory) Course Project

- Designed and assembled a quadcopter using both stock and 3D-printed components.
- Developed real-time flight-controller software in **C** for the TI MSP430 microcontroller, while working within its limited 512 bytes of RAM and 16 kilobytes of memory.

Au Delà **January 2022**

nwHacks 2022 Project

- Developed a **Flask** web application that interfaces with OpenAI's GPT-3 Davinci Codex autoregressive natural language and source code model to provide AI-powered tools for educators and students in computer science.
- Runner-up for OpenAI's Best Use of OpenAI API sponsor prize.

Project Lance **July 2021 – August 2021**

Independent Project

- Developed a simulator for Generation I Pokémon battles using **Python**.
- Implemented support for interfacing with both human and computer agents.
- Trained NEAT agents capable of playing a simplified version of the game optimally using self-play.
- Extended the NEAT-Python library using **multiprocessing** to add an evaluator capable of self-play that can be run in parallel.

UBC Course Monitor **July 2020 – August 2020**

Independent Project

- Developed a web application in **Python** using the **Django** web framework and **Celery** task queue in order to monitor the University of British Columbia's Student Services Centre for course section openings.
- Built a monitoring task that can determine a course section's status using the **Requests** HTTP library, the **BeautifulSoup** HTML parser, and **regular expressions**.
- Designed frontend using Django HTML templates and the **Bootstrap** CSS framework.
- Deployed application on **Heroku** using a **PostgreSQL** database and **Redis** task queue.

Achievements and Awards

Trek Excellence Scholarship **August 2020, August 2021**

- Received in first year and second year for placing in the top 5% of students in year and faculty.

Science Scholar/Dean's Honour List **April 2020, April 2021**

- Received for maintaining an average of 90% or higher in the 2019 and 2020 Winter Sessions at the University of British Columbia.